Earthquake Detector

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PARTS:

- plastic board (1)
- crooked plastic lever (1)
- bearing (2)
- Washers (2)

SUMMARY

An earthquake detector can be a useful home safety device because it alerts you to a quake some seconds before it happens. During an earthquake two kinds of waves are emitted from the centre: a small wave and a dangerous wave. The small wave is faster, so it is the first sign of the event if your house is located some kilometres away from the centre.

An earthquake detector could also work in combination with other devices, such as a gas valve.

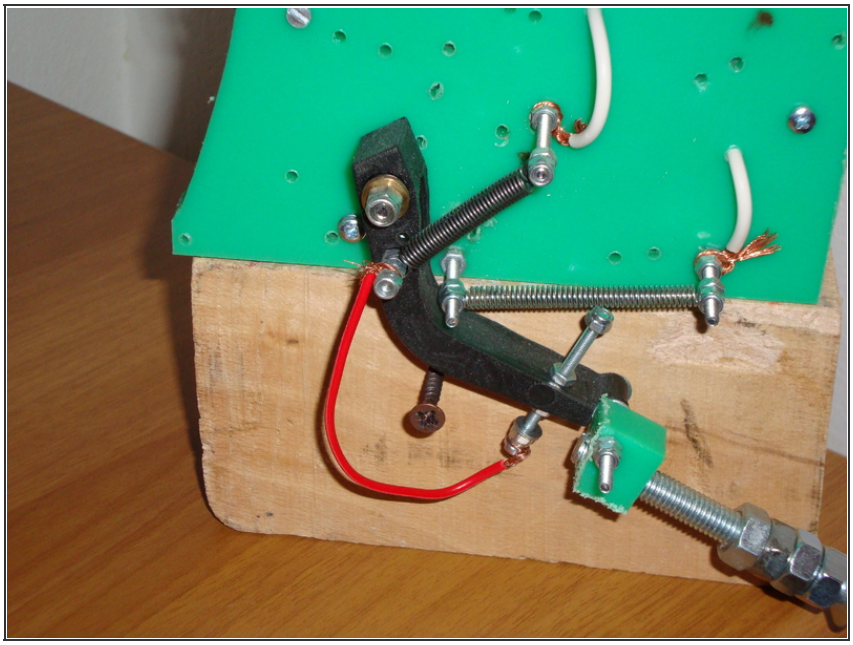
This device consists of a highly sensitive lever which is hooked to a spring. A weight is fixed at the end of the lever by an M8 screw. The lever should resonate with a frequency of about 2 HZ. When the sensor shakes, an M3 screw fixed on the lever will touch the horizontal spring, and it will close a delay-off circuit which drives a piezoelectric buzzer.

Construction drawing (pdf)

Video

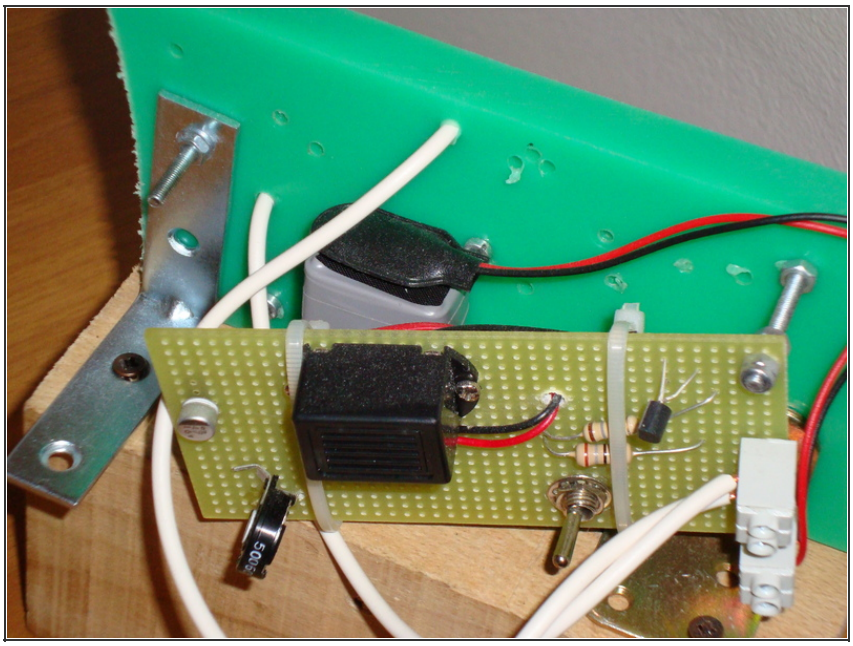
Electric circuit

Step 1 — Earthquake Detector



- Make the holes on the plastic board: 3 millimetres in diameter for the springs' anchor bolts (affix three M3 screws); 4 millimetres in diameter for the lever fulcrum (affix an M4 screw).
- Make the bearing housing on both sides of the lever: drill 8 millimetres in diameter on full depth; 9 millimetres in diameter on the sides.
- Make the hole for the spring anchor bolt (M3 screw) on the lever.
- Make the hole for the switch screw on the lever.
- Affix an M8 screw with a weight (I used some screw nuts) at the end of the lever.

Step 2



- Affix the springs and the lever on the board using self-lock screw nuts.
- Put washers on both bearings (I used brass washers).
- **Do not overtighten the M4 screw nut on the bearings; otherwise the lever will not be sensitive.**
- Connect a wire to the static anchor bolt of the lever spring.
- Connect the moving anchor bolt of the lever spring to the switch screw (you'll see a red wire jumper).
- Connect a wire to the horizontal spring.
- Connect the free ends of the wires to a delay-off bell circuit.

It works quite fine, though some details need to be fixed.

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